



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Patricia Preikschat et al.

Serial No.: 09/904,993

Art Unit: 1775

Filed: July 13, 2001

Title: CHROMIUM(VI)-FREE CONVERSION LAYER
AND METHOD FOR PRODUCING IT

Examiner: R. Koehler

Docket No.: 31716US1

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TC 1700

SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

In accordance with 37 C.F.R. § 1.97 and 1.98, applicant is submitting herewith Form PTO-1449 listing U.S. patent references and other documents for consideration by the Examiner. Also submitted herewith is a legible copy of each document listed.

Except for Greene (Patent No. 4,444,601), the references referred to in the enclosed documents are not being cited herein, because each such reference has already been cited in the present application in a prior information disclosure statement.

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on the date indicated below.

John P. Murtaugh
Name of Agent for Applicant(s)

December 2, 2003
Date

John P. Murtaugh
Signature of Agent

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Regarding the first request for reexamination submitted herewith (item K on the enclosed PTO-1449 form), the third-party requestor requested reexamination of U.S. Pat. No. 6,287,704 of which the present application is a continuation application. In this first request, the third-party requestor cited numerous references which he contended made the claims in the parent '704 patent unpatentable because the references allegedly "reveal trivalent chromates with corrosion protection equal to that of chromium(VI)-containing passive layers." (See first request, item K at pp. 2-3). The references alleged by the requestor to disclose such trivalent chromates are as follows:

U.S. Pat. No. 5,368,655 to Klos;
U.S. Pat. No. 4,349,392 to Huvar;
U.S. Pat. No. 5,407,749 to Bishop;
U.S. Pat. No. 5,393,354 to Bishop;
U.S. Pat. No. 4,578,122 to Crotty;
U.S. Pat. No. 3,843,430 to Kinder;
UK Pat. No. 2,097,024 to Hooker Chemicals and Plastics Corporation;
"Chromate Coating from Trivalent Solution," Products Finishing, August, 1983, pp. 64-65;
Barnes et al., "Non-Chromate Passivation Treatment for Zinc," Transactions of the Institute of Metal Finishing, Summer 1982, vol. 60, pp. 45-48; and
Klos, "Clear Chromates: Theory and Practice," Products Finishing, June, 1988, pp. 72-78.

It is noted that each of the above references has been cited and considered by the Examiner in the present application.

Subsequent to filing the first request (item K on the enclosed PTO-1449), the requestor filed a Submission of Prior Art Under 37 CFR 1.501, item L on the enclosed PTO-1449. In this submission, the requestor enclosed another reference, EP 0 034 040 to BNF Metals Technology Centre, and argued this reference anticipates the claims of the '704 patent by disclosing a "method for producing a conversion layer that is chromium(VI)-free and that affords at least the corrosion protection of chromium(VI)-containing yellow chromations." See item L at page 2.

Again, it is noted this reference also has been cited and considered by the Examiner in the present application.

During the first re-exam proceeding, serial No. 90/006,211 instituted by the first

request (item K), Patricia Preikschat, an expert in the field of chromation surface chemistry and the first named inventor in the >704 patent, submitted the enclosed Declaration of Patricia Preikschat, item M on the enclosed PTO-1449. In her declaration, Ms. Preikschat described the product and the process encompassed by the claims in the '704 patent, and distinguished each of the references cited by the requestor, pointing out the patentability of the claims in '704 over each. For example, in her declaration, Ms. Preikschat states:

Except for the Metal Finishing article and European Patent Application 0 034 040 A1 (discussed below), the cited references all describe classical blue chromations.... This is evident from the conditions under which they were produced (low temperature, low Cr(III) concentration, and absence of suitable complex ligands), and from the text of the references themselves. For example, both Huvar and UK Patent Application GB 2 097 024 (hereinafter "UK'024") use hydrogen peroxide as an oxidizer in the chromating solution. The presence of hydrogen peroxide prevents heating the chromating solution to sufficient temperature (~30-60°C) to provide the invented layer lest the peroxide would vaporize, depriving the solution of its essential oxidizing agent. In addition, Huvar and Crotty both teach preferred Cr(III) concentrations of 0.2-2 or 0.2-4 g/L. Conventionally, about 1 g/L Cr(III) is used to produce a classical blue chromation having a thickness of about 20-60 nm; these low concentrations are insufficient to provide the invented conversion layer having a thickness of about 100-1000 nm, especially at the temperatures employed. Also, Crotty, Klos, and the "Clear Chromates: Theory and Practice" article (Dr. K. P. Klos et al., Products Finishing, June 1988, pp. 72-78), hereinafter "Prod. Fin. '88", all disclose a corrosion protection in the range of about 24 to about 44 hours until first appearance of corrosion products; the invented conversion layer having a thickness of about 100 to 1000 nm presents a corrosion protection of at least 100 hours. In addition, Crotty, Huvar, Klos, Kinder, UK'024, Prod. Fin. '88, and the "Chromate Coating from Trivalent Solution" article (Products Finishing, August 1983, pp. 64-65), hereinafter "Prod. Fin. '83", all specify "blue" chromations...which were limited in the prior art to at most about 80 nm thickness. For example, see Crotty, col. 4 lines 24-

26, col. 9 lines 19-20, col. 10 line 4, col. 11 table 2, col 11 lines 55-56; Huvar, col. 4 lines 54-62 (specifying that cerium can be added to achieve a yellow color if desired, otherwise passivate film is a blue passivate film), and col. 9 lines 31-32; Klos, col. 4 lines 61-63; Kinder, col. 4, Example III for Cr(III); Prod. Fin. '88, p.74, 2nd column; Prod. Fin. '83, p65; UK'024, p2 lines 3-5 and lines 30-33 (teaching that cerium can be added to achieve a yellow color if desired, otherwise passivate film is blue passivate film).

Also regarding Prod. Fin. '83, the 24-200 hours of salt spray corrosion protection mentioned therein refers to a yellow chromation containing Cr(VI), and not to a Cr(VI)-free conversion layer. This is evident from the section heading "Chromate Conversion Coatings." In 1983, the term 'chromate conversion coatings' would have been understood to a person of ordinary skill in the art to refer to a Cr(VI)-chromate coating, e.g. employing $\text{Cr}_2\text{O}_7^{2-}$.

With regard to the Metal Finishing article, C. Barnes et al., "Non-Chromate Passivation Treatment for Zinc", Transactions of the Institute of Metal Finishing, Vol. 60, Part 2, pp. 45-48, Summer 1982 (hereinafter "Met. Fin. '82"), and also European Patent Application 0 034 040 A1 (hereinafter "EP'040"), these references disclose a thick *precipitated* Cr(III) layer, and *not* a Cr(III)-containing, Cr(VI)-free *conversion* layer as in the present invention. This is because of the method by which the conversion layer is formed. (Precipitated Cr(III) layers and the disadvantages thereof are [fully discussed in the body of the enclosed Preikschat Declaration]). Essentially, in both of these references there is no complex ligand suitable to form the necessary Cr(III) complex in the chromating solution to properly regulate k_2 (the rate of the formation reaction for the conversion layer). [See full text of Preikschat declaration]. Rather than reacting at a moderate speed to form a Cr(III) conversion layer, upon immersion of a zinc substrate into the chromating solution a thick layer of Cr(III) *precipitates* onto the zinc surface.

See enclosed Declaration of Patricia Prekschat (item M on PTO-1449), ¶¶20-22 (emphasis in original).

Ms. Prekschat goes on to describe the difference between a *precipitated* Cr(III) layer as taught in the 1982 Metal Finishing article, and the *conversion* layer recited in the claims of '704. In particular, Ms. Prekschat discussed that a Cr(III) *conversion* layer is a coherent, non-friable layer that does not crumble or come off using finger-pressure *even without drying*. Whereas, a precipitated Cr(III) coating as disclosed in the 1982 Metal Finishing article is a friable, crumbly layer even *after* drying. See Declaration of Patricia Prekschat (item M), ¶¶ 22-26.

Seventeen months after filing the first request for reexamination (item K), the third party requestor filed a second request for reexamination, item N on the enclosed PTO-1449. With this second request, the requestor submitted one new reference that had not been previously cited or considered in either the prosecution of the '704 patent or in the first reexamination proceeding. The new reference cited by the requestor was U.S. Pat. No. 4,444,601 to Greene. A copy of this patent reference is submitted herewith.

The requestor also submitted the Declaration of Sudha Damji and attached Exhibit A (item O on the enclosed PTO-1449) in support of the second request for reexamination. In the Damji Declaration, the declarant describes an experiment alleged to demonstrate the similarity of the chromium(III) coating disclosed in U.S. Pat. No. 5,368,655 to Klos, to that disclosed and recited in claim 1 of the '704 patent. However, it is noted that in the text of the Klos patent ('655) itself, the greatest protection afforded by the coatings disclosed in '655 was 22 hours until first appearance of corrosion products in the standard salt spray test. (See Table 3 of '655 where oxalate-chrome mol/mol ratio was 0.5 temp., pH was 2.0, and surface coverage of corrosion products was measured as <1% after 22 hours according to ASTM B-117. The same sample exhibited 5% surface coverage of corrosion products after 66 hours). Conversely, claim 1 in '704, as well as claim 1 in the present application, recite corrosion protection of about 100-1000 hours until first attack in the salt spray test, ASTM B-117.

Consideration of the above remarks and the enclosed U.S. patent references and other documents is respectfully requested.

If there are any fees required by this communication which are not covered by an enclosed check, please charge any such fees to our Deposit Account No. 16-0820, Order No. 31716US1.

Respectfully submitted,

PEARNE & GORDON LLP

Date December 2, 2003

By 

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U.S. DEPARTMENT OF COMMERCE
PATENT AND TRADEMARK OFFICEATTY. DOCKET NO.
31716US1SERIAL NO.
09/904,993APPLICANT:
Patricia Preikschat, et al.FILING DATE:
July 13, 2001GROUP ART
UNIT:
1775

U.S. PATENT DOCUMENTS

Examiner Initial		Document No.	Date	Name	Class	Subclass	Filing Date If Appropriate
	A	4,298,404	11/1981	Greene			
	B	4,444,601	04/1984	Greene			
	C						
	D						
	E						
	F						
	G						
	H						

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FOREIGN PATENT DOCUMENTS

		Document No.	Date	Country	Class	Subclass	Translation
	J						

OTHER REFERENCES (Including Author, Title, Date, Pertinent Pages, Etc.)

	K	Arthur Schaier, First Request For Reexamination of U.S. Patent No. 6,287,704 (granted as re-exam serial No. 90/006,211), Request filed in U.S. Patent Office on January 25, 2002, pages 1-118.
	L	Arthur Schaier, Submission of Prior Art Under 37 CFR 1.501 filed in re-exam proceeding serial No. 90/006,211, filed in U.S. Patent Office on March 11, 2002, pages 1-4.
	M	Patricia Preikschat, Declaration of Patricia Preikschat Under Rule 1.132 filed in re-exam proceeding serial No. 90/006,211, dated December 4, 2002, pages 1-10.
	N	Arthur Schaier, Second Request For Reexamination of U.S. Patent No. 6,287,704 (granted as re-exam serial No. 90/006,672), filed in U.S. Patent Office on June 20, 2003, pages 1-25.
	O	Sudha Damji, Declaration of Sudha Damji and attached Exhibit A, dated June 18, 2003, (submitted with the second request for reexamination of U.S. Patent No. 6,287,704), filed in re-exam proceeding serial No. 90/006,672 on June 20, 2003, pages 1-33.

Examiner:	Date Considered
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*Examiner: Initial if reference considered, regardless of whether citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant